



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,899	12/24/2003	Futoshi Deguchi	L8612.03112	9198

7590 05/03/2006

STEVENS, DAVIS, MILLER & MOSHER, L.L.P.  
Suite 850  
1615 L Street, N.W.  
Washington, DC 20036

EXAMINER

BROWN, VERNAL U

ART UNIT	PAPER NUMBER
----------	--------------

2612

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/743,899	<b>Applicant(s)</b> DEGUCHI ET AL.	
	<b>Examiner</b> Vernal U. Brown	<b>Art Unit</b> 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 3 is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-11 and 13 is/are rejected.
- 7) ☐ Claim(s) 7-8 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

This action is responsive to communication filed on February 16, 2006.

#### ***Response to Amendment***

The examiner acknowledges the amendment of claims 1-4, 6-12 and the addition of claim 13.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1-2 regarding the directional coupler have been considered but are moot in view of the new ground(s) of rejection.

Regarding applicant's argument concerning a coupling capacitor connected to the loop antenna, Hayashi et al. teaches the use of a coupling capacitor 104 connected to the loop antenna 101 (col. 8 lines 3-6).

#### ***Claim Objections***

Claim 7 is objected to because of the following informalities: The phrase "and turn number" is repeated and the examiner suggests that the term "be way of" be change to 'by way of' . Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2612

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hayashi et al. US Patent 6194993 in view of Heinrich et al. US Patent Application Publication 20020044058.

Regarding claims 1-2 and 13, Hayashi et al. teaches a non-contact IC card reading/writing apparatus comprising: a loop antenna (col. 6 lines 38-40), which supplies both electric power and a transmission signal to a non-contact IC card by way of an electromagnetic induction effect (col. 5 lines 5-10) and acquires a reception signal from the non-contact IC card by way of a load variation (col. 6 lines 24-30); a wireless transmitter, which supplies both electric power and transmission data (col. 4 lines 6-10); a wireless receiver, which acquires a reception signal from the loop antenna via the resonant circuit; wherein data transmitted from the non-contact IC card is demodulated from the reception signal by a demodulating circuit (col. 8 lines 9-11). Hayashi et al. teaches the transmitter formed by the transmission amplifier 109 and the modulator and the reception amplifier 111 are coupled together (figure 2) but is silent on teaching a directional coupler for coupling the receiver and the transmitter and is not explicit in teaching a resonant circuit which resonates the loop antenna at a desired frequency. Heinrich et al. in an art related RFID reader invention teaches a RFID reader in which the transmitter 22a and the receiver 22b are coupled by a directional coupler or circulator 22c as shown in figure 2 (paragraph 0016). One skilled recognizes that most antennas are resonant devices, which operate efficiently over a relatively narrow frequency band. An antenna must be tuned to the

Art Unit: 2612

same frequency band that the radio system operates in, otherwise reception and/or transmission will be impaired.

It would have been obvious to one of ordinary skill in the art to have a directional coupler for coupling the receiver and the transmitter and a resonant circuit that resonates the loop antenna at a desirable frequency in Hayashi et al. as evidenced by Heinrich et al. because Hayashi et al suggests bidirectional communication in an RFID reader and a directional coupler allows bi-directional communication with sufficient signal isolation for transmitting and receiving signals. One skilled recognizes that most antennas are resonant devices, which operate efficiently over a relatively narrow frequency band. An antenna must be tuned to the same frequency band that the radio system operates in, otherwise reception and/or transmission will be impaired.

Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. US Patent 6194993 in view of Everett et al. US Patent 5317330.

Regarding claims 4-5, Hayashi et al. teaches a non-contact IC card reading/writing apparatus comprising: a loop antenna (col. 6 lines 38-40), which supplies both electric power and a transmission signal to a non-contact IC card by way of an electromagnetic induction effect (col. 5 lines 5-10) and acquires a reception signal from the non-contact IC card by way of a load variation (col. 6 lines 24-30); a wireless transmitter, which supplies both electric power and transmission data (col. 4 lines 6-10); a wireless receiver, which acquires a reception signal

Art Unit: 2612

from the loop antenna via the resonant circuit; wherein data transmitted from the non-contact IC card is demodulated from the reception signal by a demodulating circuit (col. 8 lines 9-11).

Hayashi et al. teaches the use of a coupling capacitor 104 connected to the loop antenna 101 (col. 8 lines 3-6). Hayashi et al. teaches the response from the tag is generated based on a load variation (col. 8 lines 57-59). Hayashi et al. is however silent on teaching a first resonant circuit, resonates the loop antenna at a first desirable frequency and a wireless receiver, acquires a reception signal from the loop antenna via a second resonant circuit which is connected to the loop antenna by way of a coupling capacitor and is resonated at a second desirable frequency. Everett et al. in an art related RF tag invention teaches a reader having a dual resonant antenna which perform parallel resonant at the received frequency and series resonant at the transmitted frequency (col. 2 lines 5-15) so as to increase the retransmitted power from the tag to the reader.

It would have been obvious to one of ordinary skill in the art to a first resonant circuit, resonates the loop antenna at a first desirable frequency and a wireless receiver, acquires a reception signal from the loop antenna via a second resonant circuit which is connected to the loop antenna by way of a coupling capacitor and is resonated at a second desirable frequency in Hayashi et al. as evidenced by Everett et al. because Hayashi et al. suggests a reader a reader having a dual resonant antenna which perform parallel resonant at the received frequency and series resonant at the transmitted frequency so as to enable increase retransmitted power from the tag.

Regarding claim 6, Hayashi et al. teaches a second coil 201 provided in the vicinity of a first coil 2 and the first and second coil are coupled by mutual inductance (col. 9 lines 1-5). Hayashi et al. teaches one terminal of the first coil 101 is grounded and one terminal of the

Art Unit: 2612

second coil of the wireless card is connected to a second ground (figure 2). Hayashi et al. is not explicit in teaching the second coil form the second resonant circuit. One skilled in the art recognizes the coil of the reader and the IC card forms a first and second resonant circuit for the transfer of data (col. 4 lines 26-31).

It would have been obvious to one of ordinary skill in the art for the first and second coil to form a resonant circuit in Hayashi et al. because data must be transmitted at the resonant frequency of the receiving device in order for the data to be received and decoded.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. US Patent 6194993 in view of Everett et al. US Patent 5317330 and further in view of Helms US Patent 6590498.

Regarding claims 9-11, Hayashi et al. teaches the resonant frequency is formed based on the load variation (col. 6 lines 24-30) but is not explicit in teaching the use of the upper or lower side of the modulated sub carrier. Helms in an art related interrogator invention teaches tuning an interrogator to the upper and lower sideband of the carrier signal (col. 12 lines 53-57) in order to optimize the communication link and improve the signal strength of the received signal.

It would have been obvious to one of ordinary skill in the art to tune the interrogator to the upper or lower sideband of the carrier signal in Hayashi et al. in view of Everett et al. because tuning of the interrogator to the upper or lower sideband optimize the communication link and improve the signal strength of the received signal.

***Allowable Subject Matter***

Claim 3 is allowed.

Regarding claim 3, the prior art of record fail to teach or suggest a first isolator in which the reception signal is transmitted from the antenna to the receiver and the resonant circuit and transmitter are coupled to each other by a second isolator.

Claims 7-8 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 7, the prior art of record fail to teach or suggests the turn number of the first and second coil is matched and the second coil includes an impedance converting function.

Regarding claims 12, the prior art of record fail to teach or suggests an intermediate frequency transformer is provided between the second resonant circuit and the wireless receiver.

Regarding claim 8, the prior art of record fail to teach or suggests both the first and second capacitor own an impedance converting function.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period.



Art Unit: 2612

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vernal U. Brown whose telephone number is 571-272-3060. The examiner can normally be reached on 8:30-7:00 Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 571-272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Vernal Brown  
April 26, 2006



WENDY R. GARBER  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600